MDA Support to the Drug War

Maritime Domain Awareness Overview

Maritime Domain Awareness is the critical factor enabling interdiction of illicit trafficking at sea.

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The Joint Interagency Task Force South (JIATF South) is charged with the asymmetric warfare task of detection, monitoring, and hand-off to law enforcement activities of illicit trafficking events moving toward the United States from South and Central America. While illicit trafficking includes trafficking in drugs, weapons, migrants, and terrorists, the vast majority of the events detected by JIATF South are drug trafficking events.

More than 90 percent of the illicit drugs moving into the United States from South and Central America are initially transported by maritime vessels. Most of these drugs are transported in noncommercial vessels. The effective detection, monitoring, and interdiction of drug-laden vessels are all totally dependent upon establishing and maintaining an effective operational awareness of the maritime domain through which the vessels must transit.

The Threat

In general, drug transport vessels fall into two main categories: "go-fast" boats and fishing vessels. However, current trends indicate an increase in a third category: commercial shipping vessels.

The go-fast boat is the most frequently used category of drug transport vessel. Currently, two types of go-fast boats are typically used to transport drugs. In the Caribbean, although other configurations are used (Figure 1), the boat of choice is a commercially produced 37-foot open hull, powered by three 200 horsepower engines. In the Eastern Pacific, the typical go-fast is a 50-plus-foot closed hull, home-built boat powered by four or more outboard or three inboard/outboard engines (Figure 2). Go-fast boats are frequently used to transport drugs over distances of several thousand miles, and have even made runs from South America to Africa.

The fishing vessel is the second most frequently used drug transport vessel, and, while smaller in number, generally accounts for the transport of the greatest quantity of drugs. Fishing vessels have been inter-

Figure 1: Coast Guard Cutter *Tampa*, working with the 110-foot Florida-based cutters *Monhegan*, *Matagorda*, and *Padre*, directed the seizure of this go-fast boat loaded with marijuana. USCG photo.

dicted carrying loads as large as 15 metric tons. Fishing vessels can range in size from 40 feet to over 150 feet, and are usually fiberglass or steel construction. Drugs are usually hidden in secret compartments when transported on fishing vessels.

Commercial shipping is currently the smallest category of drug transport vessel. Over the past few years, however, its numbers appear to be increasing, in response to record numbers of interdictions of go-fast boats and fishing vessels. Commercial vessels are used to transport drugs in standard shipping containers, hidden in bulk cargo such as cement, or in built-in hidden compartments within the ship. Frequently, commercial ships are loaded and later unloaded at sea from go-fast boats.

Drug Transport Corridors

Drugs are moved through the Caribbean Sea, the Eastern Pacific, and across the Atlantic Ocean on their journey to the United States and Europe. These vast ocean areas are called the "drug transit zone." The transit zone encompasses an area greater than three times the area of the 48 contiguous states. To make the detection and interdiction problem more difficult, vessels transporting drugs do not take direct routes to their destinations, and there are no geographic choke-points through which they must pass.

In the Eastern Pacific, drug-laden vessels have been interdicted more than 2,000 miles west of Ecuador while en route to Mexico. Thus, the MDA problem extends over the entire transit zone.

Figure 2: In the Eastern Pacific, the typical go-fast is a 50-plus-foot closed hull boat, powered by multiple engines.

Establishing MDA in the Transit Zone

Currently, the task of establishing an operationally effective Maritime Domain Awareness picture in the drug transit zone is extremely difficult. This is due to the availability of very limited numbers of deployed ships and aircraft, and the complete absence of effective persistent wide-area surveillance sensors.

To be moderately successful, JIATF South has had to develop more effective ways to use existing platforms and sensors, and has developed and deployed new sensors where possible. For example, JIATF South pioneered the use of airborne early warning (AEW) aircraft such as the Navy's E-2 twin-engine aircraft, the Lockheed Electra P-3 four-engine turboprop, and the Air Force's Airborne Warning and Control System (AWACS) four-engine jet for maritime search. AEW aircraft are typically flown in company with a standard P-3 or C-130 long-range patrol aircraft, employed as a low-flying target interceptor, in order to maximize the wide area search capabilities of the AEW. The combination is termed a "double eagle package."

JIATF South and the counterdrug program also pioneered the deployment of third-generation forward-looking infrared sensors on fixed wing and rotary wing aircraft and on ships' masts, in order to develop night detection and monitoring capability. Another prototype capability initiated by JIATF South was the addition of a maritime target tracking capability to the tethered aerostat located on Cudjoe Key, Fla. That sensor demonstrated a capability to track go-fast boats out to a range of 85 nautical miles and is able to track large ships to well over 100 nautical miles.

Recent technical improvements to the relocatable over-the-horizon radar (ROTHR) system, a system of three high-frequency ionospheric refractive radars, has provided a limited capability to track surface vessels over large expanses of ocean. All of these initiatives have combined to give JIATF South an effective MDA picture within the drug transit zone. However, these combined capabilities are really only effective when the limited number of available assets can be deployed in support of good intelligence information.

Currently, a coherent Maritime Domain Awareness picture can only be established and maintained in small, high-interest areas, and only for limited periods of time. The end result is that JIATF South has been able to detect and interdict only about one third of the drugs departing South America for the United States and Europe each year. Much still needs to be done to develop the capability to generate and maintain a coherent MDA picture over the entire drug transit zone.

Future Improvements

Today, the most critically needed MDA technology is persistent wide-area sensors. Manned aircraft and ships cannot provide the needed persistence nor can they patrol large enough areas to be cost effective in maintaining Maritime Domain Awareness of large

ocean areas. ROTHR is currently the only truly wide-area sensor available in the JIATF South joint operating area, but its area of coverage while tracking surface vessels is still very limited. In addition, when relocatable over-the-horizon radar is used to track surface targets, its capability to track aircraft (its primary mission) is greatly reduced. Fortunately, much can still be done to significantly increase ROTHR's maritime target detection and tracking capability. Future MDA improvement efforts should include programs to maximize ROTHR's vessel tracking capabilities.

Other wide-area sensor platforms are also required for deployment and integration into the Maritime Domain Awareness picture. This past spring, JIATF South conducted a demonstration of the use of the Global Hawk unmanned air vehicle (UAV) in a maritime patrol mission. That demonstration proved that a long-endurance UAV, with an effective sensor package would be of considerable value in establishing and maintaining Maritime Domain Awareness. Unfortunately, it would take a multitude of Global Hawks to cover the entire transit zone, but even a few would be of significant value, if integrated with other wide-area sensors.

To be truly effective, high-flying, long-endurance UAVs will probably have to be flown in tandem with low-flying, medium-endurance UAVs or manned aircraft as a "super double eagle" package. New satellite sensors that are capable of tracking vessels over large ocean areas need to be developed, and improvements need to be made in getting data from existing satellites to the end user in near real time. All of these new sensors and platforms will have to be designed to be interoperable so that the target data they collect can be seamlessly fused into one integrated MDA picture.

This new integrated Maritime Domain Awareness picture, containing possibly thousands of vessels, will be too large and complex to be handled by today's command and control systems. New command and control systems will be required, which employ software tools designed to help the decision makers identify those targets that need individual attention and those that do not.

The integration of automatic identification system (AIS) data will help to identify and sort out the legitimate merchant traffic. However, fishing vessels are not currently required to carry AIS transponders. Therefore, current AIS data will not aid in detecting or sorting the legitimate fisherman from the drug runner.

Software sorting criteria and anomaly detection software will also have to be developed for each unique operating location, and intelligence information will have to be integrated with that software.

The drug war has provided a very valuable asymmetric warfare venue in which to develop new and moderately effective tools for establishing and maintaining an operationally effective Maritime Domain Awareness picture. The techniques and sensors developed in the drug war can be equally effective in any other maritime asymmetric warfare problem such as terrorism, illegal immigration, or contraband smuggling.

However, there is still much that needs to be done before a truly comprehensive MDA picture can be established and maintained in any large area of operations. Unfortunately, there are no simple solutions. It is going to take a lot of development and integration funding to get there.

About the authors:

RADM Jeffery J. Hathaway is a 1974 graduate of the U.S. Coast Guard Academy. He holds an MBA from the University of California, and a Master of Science degree in National Resources Strategy from the Industrial College of the Armed Forces. RADM Hathaway commanded three cutters, the Citrus, Legare, *and* Munro. *RADM Hathaway's tours in Washington, DC have included service as an assignment officer in the Personnel Division at CGHQ; military assistant to the U.S. Secretary of Transportation; chief, Coast Guard Congressional and Governmental Affairs Staff; and executive director, United States Interdiction Coordinator Staff. Upon promotion to Flag rank in 2001, RADM Hathaway was assigned as director, Interagency Support and Anti-Terrorism/Force Protection Division on the Navy Pentagon Staff. In 2003, he was assigned as the director of Operations Policy for the Coast Guard. RADM Hathaway assumed the duties as director, Joint Interagency Task Force South in Key West, Fla. on June 4, 2004. RADM Hathaway's personal awards include the Legion of Merit (five awards), Meritorious Service Medal (two awards), Coast Guard Commendation Medal (two awards), and the 9-11 Medal.*

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